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January 2019

A G D I Working Paper

WP/19/094

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Forthcoming: African Journal of Hospitality, Tourism and Leisure

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2019 African Governance and Development Institute WP/19/094

Research Department

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Abstract

This study investigated the sustainability of global tourism in 163 countries for the period 2010 to 2015. Given the richness of the dataset, the data has been decomposed into 11 fundamental characteristics based on income levels, legal origins and openness to the sea. The empirical evidence was based on Generalised Method of Moments (GMM). Three main hypotheses were tested from which three broad findings were established. First, *Hypothesis 1* is overwhelmingly valid because persistence in tourist arrivals is consistently an increasing function of income levels. *Hypothesis 2* is not valid because French civil law countries are associated with comparatively higher levels of persistence in tourist arrivals. *Hypothesis 3* is invalid because landlocked countries reflect higher levels of tourism persistence.

JEL Classification: D74; Z32; Z38
Keywords: Tourism Sustainability, Income Level, Generalised Method of Moments (GMM)

1. Introduction

This study was motivated by two main factors: the relevance of sustainable tourism and gaps in the literature. The two factors are substantiated in chronological order. First, sustainable tourism is important to ensure a constant stream of income for economic development, especially for economies that depend substantially on the tourism industry for economic prosperity. Moreover, ensuring "sustainable tourism" is more likely to be inclusive than "temporal tourism" because the former is potentially more likely to benefit most factions of society. This inclusive dimension is necessary for sustainable tourism because terms such as

"inclusive" and "sustain" are indispensable in the conception and definition of "sustainable development" (Amavilah et al., 2017). The phenomenon of "sustained tourism development" can also be acknowledged as "persistent tourism development" which translates a phenomenon of hysteresis based on the evidence past values of tourism positively influence future propensities to tourism. This study is positioned on assessing persistence in global tourism partly because of the gaps in the tourism literature.

The recent tourism literature has fundamentally focused on determinants of tourism, without articulating the notion of persistence in factors driving tourism (Sönmez et al., 1999; Seddighi et al., 2001; Pizam & Fleischer, 2002; Kingsbury & Brunn, 2004; Sönmez & Graefe, 1998; Saha & Yap, 2013; Alvarez & Campo, 2014; Mehmood et al., 2016). We deviate from this stream of literature by focusing on the lagged estimated tourism variable as our main independent variable of interest. This is contrary to the mainstream literature, which has focused on the conditioning information set in the investigation of factors that drive tourism. To make this assessment, a Generalised Method of Moments (GMM) technique is employed as the empirical strategy. In order to increase room for policy implications, the rich dataset is decomposed into fundamental characteristics of tourism based on income levels, legal origins and openness to sea.

The rest of the study is structured as follows. Section 2 discusses the theoretical underpinnings, the intuition, and resulting testable hypotheses. The data and methodology are engaged in Section 3, whereas Section 4 presents the empirical results and corresponding discussion. We conclude in Section 5 with implications and future research directions.

2. Theoretical underpinning, intuition and testable hypotheses

2.1 Theoretical underpinnings

The theoretical framework for persistence in tourism builds on recent empirical literature on persistence in inclusive development (Asongu & Nwachukwu, 2017a) and banking sector (Stephan & Tsapin, 2008; Goddard et al., 2011) developments. This theoretical underpinning is consistent with the literature on income convergence which has been substantially documented within the framework of neoclassical growth estimations (Barro, 1991; Barro & Sala-i-Martin, 1992, 1995; Mankiw et al., 1992; Baumol, 1986), and recently extended to other domains of economic development, *inter alia*: financial market performance (Narayan et al., 2011; Bruno et al., 2012; Asongu, 2013) and inclusive human development (Mayer-Foulkes, 2010; Asongu, 2014).

It is important to recall that in the post-Keynesian era, nascent theories of economic growth became prominent with the rise of the neoclassical revolution, which facilitated convergence or decreasing differences in income levels across countries. Within this framework, notions of market equilibrium have been substantiated to articulate some foundations of economic growth theories which predict absolute reduction in cross-country differences in income. Such convergence was established to be the outcome of policies that are favourable to "free-market competition" (Mayer-Foulkes, 2010). Seminal inquiries had established income divergence (or the absence of convergence) and substantiated such evidence with, *inter alia*: variations in initial development conditions and the possibility of multiple equilibria (see Barro, 1991; Pritchett, 1997). Conversely, another theoretical strand argues that irrespective of initial conditions, decreasing cross-country differences in income levels is feasible from the perspective of countries' long-run equilibrium or common steady state (Asongu & Nwachukwu, 2017a).

Given the above emphasis, both schools of thought agree on the criterion with which to establish convergence; a criterion which is relevant in determining persistence in the outcome variable. Hence, our purpose is not to take sides in the debate, but to build on the theoretical and empirical underpinnings employed by both schools of thought to either confirm or reject a hypothesis of convergence. Accordingly, from the perspective of tourism, contingent on fundamental features and corresponding sub-panels, the findings of this study may be sympathetic with either school of thought.

2. 2 Intuition for comparative development and testable hypotheses

The intuition motivating the choice of characteristics underlying the comparative development in tourism is consistent with recent literature on comparative development (see Narayan et al., 2011; Mlachila et al., 2017; Beegle et al., 2016; Asongu & le Roux, 2017; Asongu & Nwachukwu, 2017b). In what follows, we substantiate the intuition for the choice of these fundamental characteristics of comparative tourism development, notably: income levels, legal origins and openness to sea. The association between tourism and underlying factors is discussed in chronological order.

First, with regard to income levels, relative to low income levels, we expect tourism to be comparatively more persistent in high-income countries because such countries are associated with more instruments (financial, logistical and infrastructure) with which to maintain attractive avenues for tourists on the one hand and prevent negative externalities from factors that potentially discourage tourists, on the other hand. For instance, Gaibulloev

and Sandler (2009) have established that the negative consequences from terrorism are more apparent in low-income countries vis-à-vis their high-income counterparts since the former set of countries have less technological, logistical and financial means needed to absorb the negative macroeconomic impacts of terrorism. These negative consequences include: terror-related incidents, injuries, fatalities and damaged properties (Asongu et al., 2019a; Asongu & Acha-Anyi, 2019). Even in the absence of natural tourist destinations, high-income countries can use their wealth to create artificial tourist destinations.

Moreover: (i) institutions have been documented to substantially influence economic development on a multitude of fronts (Fosu, 2013a, 2013b; Anyanwu & Erhijakpor, 2014; Efobi, 2015); (ii) high-income countries are more associated with better institutions (Asongu, 2012) and (iii) institutions determine tourism and planning (Alipour & Kilic, 2005). Given these insights, it is logical to infer that high-income countries manage the tourism sector better vis-à-vis their low-income counterparts. In the light of these advantages from high-income countries, we expect tourism to be more sustainable or persistent in high-income nations compared to low-income nations.

Hypothesis 1: Compared to low-income countries, high-income countries are associated with more persistence in tourism.

Second, there is some consensus on the importance of legal origins in comparative economic development (La Porta et al., 1998, 1999; Agbor, 2015). Beck et al. (2003) have theorised that English common law counties have better institutions compared to their French civil law counterparts because of political and adaptability mechanisms. The political channel postulates that English common law places more priority on private property rights, vis-à-vis the power of the State, which is the focus of French civil law. The adaptability channel holds that the English common law is more likely to adapt to evolving and changing conditions compared to French civil law. These advantages provide enabling conditions for the development of business (including tourism). Therefore, the institutional web of informal rules, formal norms and enforcement characteristics handed down by former colonial powers is very likely to affect the climate of tourism.

Hypothesis 2: English common law countries have higher persistence in tourism when compared to their French civil law counterparts.

Third, consistent with recent literature, there are institutional and economic costs linked to landlockeness (Arvis et al., 2007; Asongu & le Roux, 2017). One of such costs is the lack of touristic amenities that are direct externalities of the sea. If follows from intuition, that countries that are opened to the sea should comparatively have better initial endowments that are conducive for the development of tourism.

Hypothesis 3: Landlocked countries are associated with less persistence in tourism compared to countries that are opened to the sea.

3. Data and Methodology

3.1 Data

This study investigates a panel of 163 countries with data for the period 2010 to 2015 from a multiple of sources, notably: the Uppsala Conflict Data Program (UCDP) Battle-Related Deaths Dataset; Institute for Economics and Peace (IEP); a Qualitative assessment by the Economic Intelligence Unit(EIU) analysts' estimates; the United Nations Office on Drugs and Crime (UNODC) Surveys on Crime Trends; the Operations of Criminal Justice Systems (CTS) and the United Nations Committee on Contributions. In accordance with recent tourism and development literature, the geographical and temporal scopes are based on data availability constraints (Asongu & Nwachukwu, 2019; Asongu et al., 2019b).

The main dependent variable is the number of tourist arrivals while variables in the conditioning information set include: Security Officers & Police; Homicides; Incarcerations; Conflict Intensity and the United Nations Peacekeeping Funding (UNPKF). These indicators in the conditioning information set have been documented in the literature as determinants of tourist arrivals, notably: Sönmez et al. (1999); Seddighi et al. (2001); Pizam and Fleischer (2002); Kingsbury and Brunn (2004); Sönmez and Graefe (1998); Saha and Yap (2013); Alvarez and Campo (2014) and; Mehmood et al.(2016).

In accordance with the narrative of Section 2, the following comparative fundamental features are used, namely:(i) income levels (consisting of High income, Upper middle income, Lower middle income and Low income); (ii) openness to sea (Landlocked and Coastal countries) and (iii) legal origins (English common law, French civil law, German civil law countries, Scandinavian civil law countries and Socialists countries).In what follows, we substantiate the information criteria for the choice of these fundamental characteristics, which

have been employed in recent comparative development literature (Mlachila et al., 2017; Asongu & Nwachukwu, 2017b)[1].

Classification of countries according to legal origins is consistent with La Porta et al. (2008, p. 289) whereas decomposition by income groups builds on the World Bank's categorisation[2]. Landlocked versus Coastal countries are apparent from a world map. Additional perspectives into the sources of data and corresponding definitions of variables are provided in Appendix 1, whereas the summary statistics is presented in Appendix 2. Appendix 3 discloses the correlation matrix.

3.2 Methodology

The adoption of a Generalised Method of Moments (GMM) empirical approach is informed by attendant literature on the persistence of economic phenomena (Asongu & Nwachukwu, 2017a; Doyle, 2017). The research motivates the choice of a GMM empirical strategy with four main reasons. (i) The numerical value of groups is considerably more than the corresponding number of years in each group (i.e. 163 countries > 6 years). (ii) The tourism outcome variable exhibits persistence in the light of the fact the correlation coefficient between its level and first lag series' is 0.994 which is more than 0.800 documented as the rule of thumb threshold for justifying the use the GMM approach (Tchamyou, 2019, 20120). (iii) Given that the GMM approach is based on panel data, cross-country variations are taken on board in the estimation exercise. (iv) The empirical approach is tailored such that, the concern of endogeneity is addressed from two principal angles, notably: (i) time-invariant indicators are employed to control for the heterogeneity that is unobserved while (ii) the instrumentation process accounts for simultaneity or reverse causality.

The research prefers the Roodman (2009a, 2009b) option which extends the Arellano and Bover (1995) estimator in the light of documented evidence that relative to more traditional GMM approaches (e.g. difference and system GMM), the option of Roodman option produces more efficient estimates and controls for the proliferation of engaged instruments (Love & Zicchino, 2006; Baltagi, 2008; Asongu & Nwachukwu, 2016a; Boateng et al., 2018; Tchamyou, 2019, 2020).

Equation (1) and Equation (2) presented below represent the standard procedure for estimated *system* GMM.

[1]While the motivations for the choice of fundamental features have been postulated in Section 2, in Section 3 we discuss the selection criteria for the fundamental characteristics.

[2] There are four main World Bank income groups: (i) high income, $12,276 or more; (ii)upper middle income,$3,976-$12,275; (iii) lower middle income, $1,006-$3,975 and (iv) low income, $1,005 or less.

$$T_{i,t} = \sigma_0 + \sigma_1 T_{i,t-\tau} + \sum_{h=1}^{5} \delta_h W_{h,i,t-\tau} + \eta_i + \xi_t + \varepsilon_{i,t} \quad (1)$$

$$T_{i,t} - T_{i,t-\tau} = \sigma_1 (T_{i,t-\tau} - T_{i,t-2\tau}) + \sum_{h=1}^{5} \delta_h (W_{h,i,t-\tau} - W_{h,i,t-2\tau}) + (\xi_t - \xi_{t-\tau}) + (\varepsilon_{i,t} - \varepsilon_{i,t-\tau}), \quad (2)$$

where, $T_{i,t}$ represents tourist arrivals documented for country i in period t, σ_0 is a constant, W is the vector of control variables (United Nations Peacekeeping Funding; Security Officers & Police, Incarcerations, Homicides and Conflict intensity), τ reflects the lagged coefficient which is one in this research because one year is enough to comprehensively capture previous information, ξ_t is the time-specific constant, η_i is the country-specific effect and $\varepsilon_{i,t}$ the error term.

The research also discusses identification and exclusion restrictions properties that are imperative, for a robust GMM analysis. The attendant explanatory variables are defined as predetermined or suspected endogenous and the indicators that are considered to exhibit strict exogeneity are time-invariant variables. The identification strategy is consistent with recent literature (Tchamyou & Asongu, 2017; Boateng et al., 2018; Asongu & Nwachukwu, 2016b; Tchamyou et al., 2019). The choice of time-invariant variables as strictly exogenous indicators is in accordance with Roodman (2009b) who has argued that it is not feasible for time-invariant indicators to become endogenous after first difference[3].

With regard to exclusion restrictions, in the light of the process of identification, the time-invariant indicators influence tourism exclusively, via the endogenous explaining (or suspected endogenous or predetermined) variables. Furthermore, the underlying assumption pertaining to exclusion restriction withstands empirical scrutiny if the null hypothesis for the exogeneity of instruments related to the Difference in Hansen Test (DHT) is not rejected. Put in other terms, the strictly exogenous variables (or instruments) need to explain the outcome variable exclusively through the selected mechanisms or predetermined variables.

It is relevant to clarify that in the findings that are disclosed in the next section, the hypothesis surrounding the exclusion restriction withstands empirical scrutiny if the null hypothesis of the DHT is not rejected. This failure to reject the null hypothesis is in line with more traditional instrument variable estimation procedures (Beck et al., 2003; Asongu & Nwachukwu, 2016c).

[3]Hence, the procedure for treating *ivstyle* (years) is 'iv (years, eq(diff))' whereas the *gmmstyle* is employed for predetermined variables.

4. Empirical results

Table 1 discloses the empirical results. The last column of the table provides findings pertaining to the full sample. Four fundamental criteria of are used to assess the validity of the GMM models[4]. Based on these criteria, results of full samples are not valid because the null hypotheses of the Sargan and Hansen Overidentifying Restrictions tests are not valid. It is important to note that evidence for the validity of models is a necessary but not a sufficient condition for the establishment of persistence.

To assess persistence in tourism, the lagged estimated tourism indicator should fulfill the following criteria: it should be statistically significant and should also be in line with the convergence criterion. This attendant convergence criterion maintains that the absolute value of the estimated lagged tourism coefficient should be within the remit of one and zero. More perspectives into this criterion can be found in the attendant convergence studies (Fung, 2009, p. 58; Asongu, 2013, p. 192).It is worthwhile to emphasize that in the reporting of findings from GMM estimations, the coefficient that is estimated can be directly disclosed and one deducted from the corresponding coefficient to reflect beta (β= a-1). The related convergence criterion is $\beta<0$. In the same vein, the estimated lagged value of the outcome indicator can also be reported directly and a different criterion of information(i.e. "0< lagged value <1") is used to assess the if convergence is apparent or not (Prochniak & Witkowski, 2012a, p. 20; Asongu & Nwachukwu, 2016d, p. 459; Prochniak & Witkowski, 2012b, p. 23).

In the light of the above, the comparative criterion for more persistence in tourists' arrivals is simple to follow: for two sub-samples being compared, the sub-sample with a higher estimated lagged value of the outcome variable is considered to reflect more persistence in tourists' arrivals. The magnitude of the estimated lagged value is important because it translates to how past values of tourist arrivals affect future values. Hence from a comparative standpoint, higher estimated lagged values imply that past values affect future values more proportionately.The use of the lagged outcome variable to assess persistence has been justified with contemporary literature (Asongu, 2018; Asongu & Meniago, 2018).The significance of the control variables (i.e. variables in the conditioning information set) varies across sub-samples. It is normal that the significance of control variables should vary across

[4] "*First, the null hypothesis of the second-order Arellano and Bond autocorrelation test (AR(2)) in difference for the absence of autocorrelation in the residuals should not be rejected. Second, the Sargan and Hansen overidentification restrictions (OIR) tests should not be significant because their null hypotheses are the positions that instruments are valid or not correlated with the error terms. In essence, while the Sargan OIR test is not robust but not weakened by instruments, the Hansen OIR is robust but weakened by instruments. In order to restrict identification or limit the proliferation of instruments, we have ensured that instruments are lower than the number of cross-sections in most specifications. Third, the Difference in Hansen Test (DHT) for exogeneity of instruments isalso employed to assess the validity of results from the Hansen OIR test. Fourth, a Fischer test for the joint validity of estimated coefficients is also provided*" (Asongu & De Moor, 2017, p.200).

sub-samples in the light of the fact that the control variables are also contingent on these sub-samples. Indeed this is even consistent with the definition of conditional persistence because conditional persistence occurs when there are cross-country changes in the determinants of the outcome variable which include the elements in the conditioning information set (or control variables). Moreover, it also relevant to mention that estimations in which the number of instruments is higher than the corresponding number of countries are not considered to be robust.

Table 1: Persistence in Tourism with income levels, religious domination and landlockedness

	Dependent Variable: Tourist arrivals											
	Income Levels(Hypothesis 1)				Legal origins (Hypothesis 2)					Openness to sea (Hypothesis 3)		Full
	HI	UMI	LMI	LI	Eng.	Frch.	Ger.	Scand.	Social.	LL	NLL	Sample
Constant	0.368	**0.868*** **	**1.557*** **	0.836	**1.143** **	0.700	-0.755	na	na	**1.349*** **	**1.035** **	-0.158
	(0.119)	**(0.008)**	**(0.000)**	(0.200)	**(0.019)**	(0.192)	(0.217)			**(0.009)**	**(0.024)**	(0.768)
Tourist arrival (-1)	**0.979*** **	**0.961*** **	**0.891*** **	**0.890*** **	**0.905*** **	**0.953*** **	**1.069*** **			**0.932*** **	**0.926*** **	**0.990*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**			**(0.000)**	**(0.000)**	**(0.000)**
Security Officers & Police	**0.061*** **	-0.018	**-0.099*** **	**0.064***	0.031	0.030	-0.019			**-0.129*** **	0.026	0.011
	(0.006)	(0.429)	**(0.009)**	**(0.088)**	(0.520)	(0.406)	(0.654)			**(0.002)**	(0.421)	(0.735)
Homicides	0.010	**-0.065*** **	**-0.046***	**0.082*** **	0.030	-0.001	-0.081			-0.031	-0.043	-0.028
	(0.654)	**(0.002)**	**(0.066)**	**(0.007)**	(0.415)	(0.974)	(0.163)			(0.233)	(0.306)	(0.432)
Incarcerations	-0.00007	0.0009	**0.096*** **	-0.071	0.070	0.029	0.108			**0.062*** **	0.028	0.039
	(0.996)	(0.954)	**(0.001)**	(0.200)	(0.335)	(0.448)	(0.277)			**(0.009)**	(0.507)	(0.291)
Conflict Intensity	**-0.047** **	-0.022	0.032	0.031	-0.049	**-0.073***	0.086			**-0.065***	-0.023	0.053
	(0.015)	(0.376)	(0.256)	(0.694)	(0.231)	**(0.052)**	(0.277)			**(0.074)**	(0.619)	(0.239)
Conflict Fought	0.013	**0.080*** **	**0.070** **	0.052	0.0009	0.021	-0.395			-0.003	**0.071** **	**0.091*** **
	(0.529)	**(0.000)**	**(0.014)**	(0.258)	(0.976)	(0.534)	(0.629)			(0.876)	**(0.024)**	**(0.006)**
UNPKF	**-0.098*** **	**-0.023*** **	0.007	**0.062*** **	0.027	0.011	-0.016			**0.040*** **	0.021	**0.034** **
	(0.000)	**(0.004)**	(0.579)	**(0.001)**	(0.126)	(0.402)	(0.344)			**(0.000)**	(0.212)	**(0.044)**
AR(1)	(0.035)	**(0.100)**	(0.028)	**(0.375)**	**(0.211)**	(0.055)	**(0.180)**			(0.044)	(0.078)	(0.015)
AR(2)	**(0.140)**	**(0.753)**	**(0.741)**	**(0.798)**	**(0.463)**	**(0.115)**	**(0.371)**			**(0.176)**	**(0.916)**	**(0.638)**
Sargan OIR	**(0.157)**	**(0.224)**	(0.077)	**(0.657)**	**(0.012)**	**(0.214)**	**(0.756)**			(0.405)	(0.015)	(0.045)
Hansen OIR	**(0.287)**	**(0.182)**	**(0.550)**	**(0.374)**	**(0.398)**	**(0.337)**	**(0.983)**			**(0.387)**	**(0.131)**	(0.099)
DHT for instruments												
(a)Instruments in levels												
H excluding group	**(0.579)**	**(0.846)**	**(0.412)**	**(0.855)**	**(0.507)**	**(0.599)**	**(0.850)**			**(0.476)**	**(0.955)**	**(0.982)**
Dif(null, H=exogenous)	**(0.189)**	(0.060)	**(0.570)**	**(0.168)**	**(0.330)**	**(0.227)**	**(0.958)**			**(0.333)**	(0.028)	(0.016)
(b) IV (years, eq (diff))	**(0.641)**	**(0.212)**	**(0.428)**	**(0.713)**	**(0.248)**	**(0.492)**	**(0.993)**			**(0.513)**	**(0.205)**	**(0.267)**
H excluding group												
Dif(null, H=exogenous)	**(0.036)**	**(0.241)**	**(0.746)**	**(0.048)**	**(0.910)**	**(0.135)**	**(0.417)**			**(0.175)**	**(0.131)**	(0.041)
Fisher	**15697*** **	**13056*** **	**575.87*** **	**133.07*** **	**216.25*** **	**360.21*** **	**2412*** **			**1099*** **	**157.17*** **	**234.42*** **
Instruments	30	30	30	30	30	30	30			30	30	30
Countries	42	34	42	32	45	80	19			30	120	150
Observations	166	134	159	118	174	304	75			113	464	577

***,**,*: significance levels at 1%, 5% and 10% respectively. DHT: Difference in Hansen Test for Exogeneity of Instruments Subsets. Dif: Difference. OIR: Over-identifying Restrictions Test. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Wald statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(1) & AR(2) tests; and b) the validity of the instruments in the Sargan and Hansen OIR tests. HI: High Income countries. UMI: Upper Middle-Income countries. LMI: Lower Middle-Income countries. LI: Low-Income countries. Eng: English Common Law countries. Frch: French Civil Law countries. Ger: German Civil law countries. Scand: Scandinavian Civil law countries. Social: Socialists countries.LL: Landlocked countries. NLL: Not Landlocked countries. na: not applicable because of issues in degrees of freedom. UNPKF: United Nations Peacekeeping Funding.

Considering the hypotheses under investigation, the following results can be established. First, *Hypothesis 1* is overwhelmingly valid because persistence in tourist arrivals is consistently an increasing function of income levels. Accordingly, in income groups, the estimated lagged outcome variable is high in lower middle-income countries (compared to their Low income counterparts), higher in upper middle-income countries and highest in high-

income countries. *Hypothesis 2* is not valid because French civil law countries are associated with comparatively higher levels of persistence in tourist arrivals, compared to their English common law counterparts. It is important to note that, whereas the estimated lagged outcome variable for German civil law countries does not meet the convergence criterion ("0< lagged value <1"), the other two legal origin sub-samples cannot be estimated owing to issues in degrees of freedom. *Hypothesis 3* is invalid because countries that are landlocked reflect higher levels of tourism persistence.

The evidence of convergence or persistence established above is contingent on the variable employed in the conditioning information set. Whereas the signs and significance of these variables vary across sub-samples, what is important to note is that the indicators contained in the conditioning information set logically affect the tourists' location decision. Engaging the significance (significant versus non-significant) and sign (positive versus negative) of these variables will require the study to delve into sub-sample specificities, which is out of scope because the independent variable of interest in the study is the estimated lagged outcome variable.

5. Concluding remarks

This study has investigated the sustainability of global tourism in 163 countries for the period 2010 to 2015. Given the richness of the dataset, the data has been decomposed into11fundamental characteristics based on income levels, legal origins and openness to the sea. The empirical evidence is based on Generalised Method of Moments (GMM). Three main hypotheses have been tested from which three broad findings have been established. First, *Hypothesis 1* is overwhelmingly valid because persistence in tourist arrivals is consistently an increasing function of income levels. *Hypothesis 2* is not valid because French civil law countries are associated with comparatively higher levels of persistence in tourist arrivals. *Hypothesis 3* is invalid because countries that are landlocked reflect higher levels of tourism persistence.

The invalid hypotheses pertain to legal origins and landlockedness. They are discussed in chronological order. First, with regard to the legal origin theory upon which the Common law versus Civil law hypothesis is based, a number of doubts have been raised. For instance, the theory assumes that Common law systems (with a strong role of the judiciary and stringent property rights) enhance economic development to a greater extent than Civil law. The solidity of this assumption may be questioned with four fundamental shortcomings. First, there is doubt in some scholarly circles as to whether it is historically justified to distinguish

between Civil law and Common law (Deakin & Siems 2010; Fowowe, 2014). Second, due to evolving globalisation, contemporary tendencies make the basis for distinguishing Common law and Civil law less persuasive. Third, it may not be apparent why fundamentally, tourism will be sustained more averagely in countries with Common law systems purely on the hypothesis that its tradition is characterised with more flexibility to changing and evolving conditions. Fourth, classification of countries in terms of legal origins fails to account for the following: mixture and modification at the time when a foreign law is copied; the weight of pre-transplant law and influence of the post-transplant period. It is important to note that, in the latter period, laws that are transplanted can be altered or applied distinctly compared to the country of origin.

Second, with regard to landlockedness, a reason the hypothesis does not hold may be that cross-country variations in indicators contained in the conditioning information could be inconsistent with the assumption of cross-country differences in tourist arrivals based on whether a country is open to the sea or not. In essence, persistence in the tourist arrivals is contingent on the indicators selected and empirically engaged (Narayan et al., 2011). Hence, in some cases or for some fundamental characteristics, the indicators adopted in the conditioning information set may not fully reflect the basis for using the selected fundamental characteristic to categorise countries. This drawback, which doubles as a caveat to the present study, builds from the theoretical perspective that, conditional convergence is more likely to take place when there are cross-country differences in determinants that influence tourists' arrivals. Therefore, by extension, the conclusions of this paper are contingent on the determinants of tourism we have introduced in the models. The numerical value of the determinants is not an issue because recent empirical literature on persistence is based on a fewer number of determinants. For example, Bruno et al. (2012) have used two control variables. Future studies can focus on country-specific studies in order to articulate findings with more country-specific relevant policy implications.

Appendices

Appendix 1: Definition of variables and countries

Panel A: Definitions and sources of variables

Tourism	Logarithm of the number of tourists arrivals
Internal conflicts fought	Number and duration of internal conflicts Uppsala Conflict Data Program (UCDP) Battle-Related Deaths Dataset, Non-State Conflict Dataset and One-sided Violence Dataset; Institute for Economics and Peace (IEP)
Intensity of internal conflict	Intensity of organised internal conflict Qualitative assessment by EIU analysts
Homicides	Number of homicides per 100,000 people United Nations Office on Drugs and Crime (UNODC) Surveys on Crime Trends and the Operations of Criminal Justice Systems (CTS); EIU estimates
Incarceration	Number of jailed population per 100,000 people World Prison Brief, International Centre for Prison Studies, University of Essex
Security Officers & Police	Number of internal security officers and police per 100,000 people UNODC; EIU estimates
United Nations Peacekeeping Funding.	Financial contribution to UN peacekeeping missions United Nations Committee on Contributions; IEP

Panel B: Sampled countries (163)

"Afghanistan; Albania; Algeria; Angola; Argentina; Armenia; Australia; Austria; Azerbaijan; Bahrain; Bangladesh; Belarus; Belgium; Benin; Bhutan; Bolivia; Bosnia and Herzegovina; Botswana; Brazil; Bulgaria; Burkina Faso; Burundi; Cambodia; Cameroon; Canada; Central African Republic; Chad; Chile; China; Colombia; Costa Rica; Cote d' Ivoire; Croatia; Cuba; Cyprus; Czech Republic; Democratic Republic of the Congo; Denmark; Djibouti; Dominican Republic; Ecuador; Egypt; El Salvador; Equatorial Guinea; Eritrea; Estonia; Ethiopia; Finland; France; Gabon; Georgia; Germany; Ghana; Greece; Guatemala; Guinea; Guinea-Bissau; Guyana; Haiti; Honduras; Hungary; Iceland; India; Indonesia; Iran; Iraq; Ireland; Israel; Italy; Jamaica; Japan; Jordan; Kazakhstan; Kenya; Kosovo; Kuwait; Kyrgyz Republic; Laos; Latvia; Lebanon; Lesotho; Liberia; Libya; Lithuania; Macedonia (FYR); Madagascar; Malawi; Malaysia; Mali; Mauritania; Mauritius; Mexico; Moldova; Mongolia; Montenegro; Morocco; Mozambique; Myanmar; Namibia; Nepal; Netherlands; New Zealand; Nicaragua; Niger; Nigeria; North Korea; Norway; Oman; Pakistan; Palestine; Panama; Papua New Guinea; Paraguay; Peru; Philippines; Poland; Portugal; Qatar; Republic of the Congo; Romania; Russia; Rwanda; Saudi Arabia; Senegal; Serbia; Sierra Leone; Singapore; Slovakia; Slovenia; Somalia; South Africa; South Korea; South Sudan; Spain; Sri Lanka; Sudan; Swaziland; Sweden;Switzerland; Syria; Taiwan; Tajikistan; Tanzania; Thailand; The Gambia; Timor-Leste; Togo; Trinidad and Tobago; Tunisia; Turkey; Turkmenistan; Uganda; Ukraine; United Arab Emirates; United Kingdom; United States of America; Uruguay; Uzbekistan; Venezuela; Vietnam; Yemen; Zambia and Zimbabwe".

Uppsala Conflict Data Program (UCDP). The Institute for Economics and Peace (IEP). The Economic Intelligence Unit (EIU). United Nations Peacekeeping Funding (UNPKF). GDP: Gross Domestic Product. The International Institute for Strategic Studies (*IISS*).

Appendix 2: Summary Statistics

Variables	Mean	Standard dev.	Minimum	Maximum	Obsers
Tourism (Ln)	14.450	1.761	8.987	18.243	732
Internal conflicts fought	1.458	1.024	1.000	5.000	977
Intensity of internal conflict	2.412	1.162	1.000	5.000	978
Homicides	2.797	1.154	1.103	5.000	978
Incarceration	2.194	0.889	1.150	5.000	978
Security Officers& Police	2.728	0.911	1.081	5.000	978
United Nations Peacekeeping Funding.	2.291	1.164	1.000	5.000	978

Ln: logarithm. Standard dev: Standard deviation. Obsers: Observations.

Appendix 3: Correlation matrix(uniform sample size: 731)

InterconfF	InInterconf	Homicides	Incarcerations	SO & P	UNPKF	Tourist	
1.000	0.514	0.179	-0.125	-0.071	0.106	-0.075	InterconfF
	1.000	0.320	-0.073	0.014	0.289	-0.352	InInterconfF
		1.000	0.184	-0.024	0.320	-0.352	Homicides
			1.000	0.274	-0.151	0.259	Incarcerations
				1.000	-0.032	0.111	SO &P
					1.000	-0.399	UNPKF
						1.000	Tourist

InterconfF: Internal conflicts fought. InInterconf: Intensity of internal conflict. SO &P: Security Officers & Police. UNPKF: United Nations Peacekeeping Funding.

References

Agbor, J. A. (2015). "How does colonial origin matter for economic performance in sub-Saharan Africa?", In Augustin K. Fosu (Ed.), *Growth and Institutions in African Development,* Chapter 13, pp. 309-327, Routledge Studies in Development Economics: New York.

Alipour, H., & Kilic, H., (2005). "An institutional appraisal of tourism development and planning: the case of the Turkish Republic of North Cyprus (TRNC)", *Tourism Management*, 26(1), pp. 79-94.

Alvarez, M. D. & Campo, S., (2014). "The Influence of Political Conflicts on Country Image and Intention to visit: A Study of Israel's Image."*Tourism Management*, 40(February), pp. 70-78.

Amavilah, V., Asongu, S. A., & Andrés, A. R., (2017). "Effects of globalization on peace and stability: Implications for governance and the knowledge economy of African countries", *Technological Forecasting and Social Change*, 122(September), pp. 91-103.

Anyanwu, J., & Erhijakpor, A., (2014). "Does Oil Wealth Affect Democracy in Africa?"*African Development Review*, 26 (1), pp. 15-37.

Arvis, J-F., Marteau, J-F., & Raballand, G. (2007).The cost of being landlocked: logistics costs and supply chain reliability", *Word Bank Working Paper Series* No. 4258, Washington.

Asongu, S. A. (2012). "Government Quality Determinants of Stock Market Performance in African Countries", *Journal of African Business*, 13(3), pp. 183-199.

Asongu, S. A. (2013). "African Stock Market Performance Dynamics: A Multidimensional Convergence Assessment", *Journal of African Business*, 40(3), pp. 186-201.

Asongu, S. A., (2014). "African Development: Beyond Income Convergence", *South African Journal of Economics*, 82(3), pp. 334-353.

Asongu, S. A., (2018). "Persistence in Incarcerations: Global Comparative Evidence", *Journal of Criminological Research, Policy and Practice*, 4(2), pp.136-147.

Asongu, S. A, & De Moor, L., (2017). "Financial Globalisation Dynamic Thresholds for Financial Development: Evidence from Africa", *European Journal of Development Research*, 29(1), pp. 192-212.

Asongu, S. A., & le Roux S., (2017). "Enhancing ICT for inclusive human development in Sub-Saharan Africa", *Technological Forecasting and Social Change*, 118(May), pp. 44–54.

Asongu, S. A., & Meniago, C., (2018). "Technology and persistence in global software piracy", *Netnomics*, 19(1–2), pp. 43–63.

Asongu, S. A, & Nwachukwu, J. C., (2016a). "The Mobile Phone in the Diffusion of Knowledge for Institutional Quality in Sub Saharan Africa", *World Development*, 86(October), pp. 133-147.

Asongu, S. A., & Nwachukwu, J. C., (2016b). "The Role of Governance in Mobile Phones for Inclusive Human Development in Sub-Saharan Africa", *Technovation*, 55-56 (September- October), pp. 1-13.

Asongu, S. A, & Nwachukwu, J. C., (2016c). "Foreign aid and governance in Africa", *International Review of Applied Economics*, 30(1), pp. 69-88.

Asongu, S. A., & Nwachukwu, J. C., (2016d). "Revolution empirics: predicting the Arab Spring", *Empirical Economics*, 51(2), pp. 439-482.

Asongu, S. A., & Nwachukwu, J. C., (2017a). "Mobile phones in the diffusion of knowledge and persistence in inclusive human development in Sub-Saharan Africa", *Information Development,* 33(3), pp. 289-302.

Asongu, S. A., & Nwachukwu, J. C., (2017b). "The Comparative Inclusive Human Development of Globalisation in Africa", *Social Indicators Research*, 134(3), pp 1027–1050.

Asongu, S. A., & Nwachukwu, J. C., (2019)."Mitigating externalities of terrorism on tourism: global evidence from police, security officers and armed service personnel", *Current Issues in Tourism*, 22(20), pp. 2466-2471.

Asongu, S. A., Uduji, J. I. & Okolo-Obasi E. N., (2019a). "Tourism and insecurity in the world". *International Review of Economics*, 66(4), pp. 453–472.

Asongu, S. A., Nwachukwu, J. C., & Pyke, C., (2019b). "The Right to Life: Global Evidence on the Role of Security Officers and the Police in Modulating the Effect of Insecurity on Homicide", *Social Indicators Research*, 143(2), pp. 727–740.

Baltagi, B. H., (2008). "Forecasting with panel data", *Journal of Forecasting*, 27(2), pp. 153-173.

Barro, R., (1991). "Economic Growth in a Cross Section of Countries". *Quarterly Journal of Economics*, 196 (2/May), pp. 407-443.

Barro, R. J., & Sala-i-Martin, X., (1992). "Convergence", *Journal of Political Economy*, 100(2), pp. 223-251.

Barro, R. J., & Sala-i-Martin, X., (1995). Economic Growth. The MIT Press, Cambridge, MA.

Baumol, W. J., (1986). "Productivity, growth, convergence and welfare: what the long run data show", *American Economic Review*, 76(5), pp. 1072-1085.

Beck, T., Demirgüç-Kunt, A., & Levine, R., (2003), "Law and finance: why does legal origin matter?", *Journal of Comparative Economics*, 31(4), pp. 653-675.

Beegle, K., Christiaensen, L., Dabalen, A., & Gaddis, I., (2016). "Poverty in a Rising Africa", Africa Poverty Report, the World Bank, Washington. http://www.worldbank.org/en/region/afr/publication/poverty-rising-africa-poverty-report (Accessed: 23/07/2016).

Blundell, R., & Bond, S., (1998). "Initial conditions and moment restrictions in dynamic panel data models" *Journal of Econometrics*, 87(1), pp. 115-143.

Boateng, A., Asongu, S. A., Akamavi, R., & Tchamyou, V. S., (2018). "Information Asymmetry and Market Power in the African Banking Industry", *Journal of Multinational Financial Management,* 44 (March), pp. 69-83.

Bond, S., Hoeffler, A., & Tample, J. (2001) "GMM Estimation of Empirical Growth Models", University of Oxford.

Bruno, G., De Bonis, R., & Silvestrini, A., (2012). "Do financial systems converge? New evidence from financial assets in OECD countries". *Journal of Comparative Economics*; 40(1), pp. 141-155.

Deakin, S., & Siems, M. (2010). "Comparative law and finance: Past, present and future research". *Journal of Institutional and Theoretical Economics*, 166(1), 120-140.

Doyle, J. M., (2017). "Persistence in the long-run expected rate of return for corporate pension plans", *The Quarterly Review of Economics and Finance*, 63(February), pp. 271–277.

Efobi, U., (2015). "Politicians' Attributes and Institutional Quality in Africa: A Focus on Corruption", *Journal of Economic Issues*, 49(3), pp. 787-813.

Fosu, A., (2013a), "Growth of African Economies: Productivity, Policy Syndromes and the Importance of Institutions" *Journal of African Economies*, 22(4), pp. 523-551.

Fosu, A. (2013b). Achieving development success: Strategies and lessons from the developing world, *UNU-WIDER Policy Brief* (November), Helsinki.

Fowowe, B., (2014). "Law and Finance Revisited: Evidence from African Countries", *South African Journal of Economics*, 82(2), pp. 193-208.

Fung, M. K., (2009). "Financial development and economic growth: Convergence or divergence?", *Journal of International Money and Finance*, 28(1), pp. 56–67.

Gaibulloev, K., & Sandler, T., (2009). "The impact of terrorism and conflicts on growth in Asia", *Economics and Politics*, 21(3), pp. 359-383.

Goddard, J., Liu, H., Molyneux, P., & Wilson, J. O. S. (2011). "The persistence of bank Profit". *Journal of Banking & Finance*, 35(11), pp. 2881-2890.

Kingsbury, P. T. & Brunn, S. D., (2004). "Freud, Tourism, and Terror: Traversing the Fantasies of Post-September 11 Travel Magazines."*Journal of Travel & Tourism Marketing*, 15, (2-3), pp. 39-61.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998)."Law and finance", *Journal of Political Economy*, 106(6), 1113-1155.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1999)."The quality of government", *Journal of Law, Economics and Organization*, 15(1), pp. 222-279.

La Porta, R., Lopez-de-Silanes, F., & Shleifer, A., (2008), "The Economic Consequences of Legal Origin," *Journal of Economic Literature*, 46(2), pp. 285-332.

Love, I., & Zicchino, L., (2006). "Financial Development and Dynamic Investment Behaviour: Evidence from Panel VAR" .*The Quarterly Review of Economics and Finance*, 46(2), pp. 190-210.

Mankiw, N. G., Romer, D., & Weil, D. N., (1992). "A contribution to the empirics of economic growth", *Quarterly Journal of Economics*, 107 (May, 1992), pp. 407–437.

Mayer-Foulkes, D., (2010). "Divergences and Convergences in Human Development". UNDPHuman Development Research Paper No. 2010/20, New York.

Mehmood, S., Ahmad, Z. & Khan, A. A., (2016). "Dynamic Relationships between Tourist Arrivals, Immigrants, and Crimes in the United States."*Tourism Management*, 54(June), No.383-392.

Mlachila, M., Tapsoba, R., & Tapsoba, S. J. A., (2017). "A Quality of Growth Index for Developing Countries: A Proposal", *Social Indicators Research*, 134(2), pp 675–710.

Narayan, P.K., Mishra, S., & Narayan, S., (2011). "Do market capitalization and stocks traded converge? New global evidence". *Journal of Banking and Finance*, 35(10), pp. 2771-2781.

Pizam, A. & Fleischer, A. (2002). "Severity versus Frequency of Acts of Terrorism: Which Has a Larger Impact on Tourism Demand?"*Journal of Travel Research*, 40(3), pp. 337-339.

Pritchett, L., (1997). "Divergence, Big Time". *Journal of Economic Perspectives*, 11(3), pp. 3-17.

Prochniak, M., & Witkowski, B., (2012a). "Beta convergence stability among "Old" and "New" EU countries: The Bayesian Model Averaging Perspective", Warsaw School of Economics.

Prochniak, M., & Witkowski, B., (2012b). "Real economic convergence and the impact of

monetary policy on economic growth of the EU countries: The analysis of time stability and the identification of major turning points based on the Bayesian methods", Warsaw School of Economics.

Roodman, D., (2009a). "A Note on the Theme of Too Many Instruments", *Oxford Bulletin of Economics and Statistics*, 71(1), pp. 135-158.

Roodman, D., (2009b). "How to do xtabond2: An introduction to difference and system GMM in Stata", *Stata Journal*, 9(1), pp. 86-136.

Saha, S. & Yap, G., (2013). "The Moderation Effects of Political Instability and Terrorism on Tourism Development."*Journal of Travel Research*, 53(4), pp. 509-521.

Seddighi, H. R. & Theocharous, A. L. (2002). "A Model of Tourism Destination Choice: A Theoretical and Empirical Analysis."*Tourism Management*, 23(5), pp. 475-487.

Sönmez, S. F., Apostolopoulos, Y. & Tarlow, P. (1999). "Tourism in Crisis: Managing The Effects of Terrorism."*Journal of Travel Research*, 38(1), pp. 13-18.

Sönmez, S. F. & Graefe, A. R. (1998). "Influence of Terrorism Risk on Foreign Tourism Decisions."*Annals of Tourism Research*, 25(1), pp. 112-144.

Stephan, A., & Tsapin, A. (2008). "Persistence and determinants of firm profit in emerging Markets". *Applied Economics Quarterly*, 54(4), pp. 231-253.

Tchamyou, V. S., (2020). "Education, Lifelong learning, Inequality and Financial access: Evidence from African countries", *Contemporary Social Science*. DOI: 10.1080/21582041.2018.1433314.

Tchamyou, V.S., (2019)."The Role of Information Sharing in Modulating the Effect of Financial Access on Inequality", *Journal of African Business*, 20(3), pp. 317-338.

Tchamyou, V. S., & Asongu, S. A., (2017). "Information Sharing and Financial Sector Development in Africa", *Journal of African Business*, 18(1) pp. 24-49.

Tchamyou, V. S., Erreygers, G., &Cassimon, D., (2019). "Inequality, ICT and Financial Access in Africa", *Technological Forecasting and Social Change*,139 (February), pp. 169-184.